Meridian 1

Meridian data features

Operations and tests

Document Number: 553-2731-300
Document Release: Standard 4.00
Date: April 2000

Copyright © 1990–2000 Nortel Networks
All Rights Reserved

Printed in Canada

Information is subject to change without notice. Nortel Networks reserves the right to make changes in design or components as progress in engineering and manufacturing may warrant. This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC rules, and the radio interference regulations of Industry Canada. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.

SL-1 and Meridian 1 are trademarks of Nortel Networks.

Revision history

April 2000

Standard 4.00. This is a global document and is up-issued for X11 Release 25.0x. Document changes include removal of: redundant content; references to equipment types except Options 11C, 51C, 61C, and 81C; and references to previous software releases.

December 1994

Standard, release 3.00. Reissued to include editorial changes and indexing. Due to the extent of the changes, revision bars are not used.

December 1992

Standard, release 2.00.

August 1990

Standard, release 1.00. Reissued for compliance with Nortel Networks standard 164.0.

Contents

Introduction 7

Operation procedures and tests 9

Content list 9

Reference list 9

Prerequisites 9

Testing procedures 10

Operating procedures 12

Hot Line calls 26

Keyboard dialing 28

Keyboard dialing from the AIM data station 33

Keyboard dialing from the ASIM data station 42

Keypad dialing from the ASIM data station 54

Performance testing operations 61

Content list 61

Reference List 61

In-house transmission performance testing 62

Interoffice data transmission performance testing 62

Outbound Modem Pool fault testing 63

Inbound Modem Pool fault testing 63

AIM and AILC fault testing 64

ASIM troubleshooting procedures 69

Glossary **73**

Index **81**

Introduction

This document describes how to operate the Meridian data station and how to test its on-line transmission performance.

A colocated data station consists of a QSU-type SL-1 telephone and an Add-on Data Module (ADM) connected to data terminal equipment.

> ***Note:*** References in this publication to ADMs imply QMT7, QMT8, and QMT12 ADMs.

The Meridian colocated data station permits data calling and regular telephone calling to and from a single SL-1 telephone. The data station also allows several optional calling features associated with the SL-1 telephone to be used in conjunction with data calling.

A stand-alone ADM, when connected to a data terminal (for example, without a companion SL-1 terminal), provides services associated with Meridian data calling that do not require user intervention.

Configuring each stand-alone ADM appropriately is critical to the proper function of Meridian data stations.

The Asynchronous Interface Module (AIM) provides the interface between an RS-232-C compatible asynchronous Data Terminal Equipment (DTE) through its Asynchronous Interface Line Card (AILC).

The AIM may be desktop or wall-mounted and is used to originate and to answer data calls. It supports keyboard dialing.

The Asynchronous/Synchronous Interface Module (ASIM) provides the interface between an RS-232-C compatible asynchronous or synchronous DTE and the Meridian 1 system.

The ASIM is desktop mounted and is used to originate and to answer data calls. It supports the following:

- Keyboard and keypad dialing for asynchronous calling
- Keypad dialing only for synchronous calling
- Automatic set relocation

A Multi-Channel Data System (MCDS) accesses a multiple port computer and takes the place of several ADMs. The 4-port MCDS Asynchronous Card (MCDS-AC) performs the same functions as four separate ADMs.

The operations of the Meridian data station described in this publication should be performed after installation to ensure that each ADM is functional and is properly configured to provide the data service the customer requires.

Operation procedures and tests

Content list

The following are the topics in this section:

- Reference list 9
- Prerequisites 9
- Testing procedures 10
- Operating procedures 12
- Hot Line calls 26
- Keyboard dialing 28
- Keyboard dialing from the AIM data station 33
- Keyboard dialing from the ASIM data station 42
- Keypad dialing from the ASIM data station 54

Reference list

The following are the references in this section:

- *X11 Features and Services* (553-3001-306)

Prerequisites

Ensure that commercial power is supplied at the appropriate outlets. Be sure the power modules required for any SL-1 set Add-on Data Module—for example, the QMT—equipped at Meridian data station are installed according to instructions.

Designate or install a test station to have access to external data test equipment before testing the Meridian data station or stand-alone ADM.

Testing procedures

The operating procedures specify the manner the Meridian data station and stand-alone Add-on Data Module (ADM), Asynchronous Interface Module (AIM), and Asynchronous/Synchronous Interface Module (ASIM) normally function.

If there are any differences when testing, follow these steps:

1 Check the following connections to verify that the data-related equipment is properly connected.

- ADM, AIM, and ASIM power
- Power Fail Transfer (PFT)
- ADM-to-SL-1 set
- ADM, AIM, and ASIM-to-DTE
- ADM and ASIM-to-Data Communication Equipment (DCE)
- DCE to peripheral equipment (PE)
- Multi-Channel Data System (MCDS) to PE connections to the connecting block
- Cross-connections at the Main Distribution Frame (MDF) for bridge taps and eliminate

2 Verify through the following steps that the appropriate assignments have been made in the database (LD 10 or LD 11) to allow operation:

- Check Data Line Card (DLC) port and Asynchronous Interface Line Card (AILC) assignments.
- Check ADM, AIM, and ASIM feature assignments.
- Verify SL-1 and ADM, AIM, and ASIM key assignments.
- Check Modem Pool Line Card (MPLC) or 500-set line card assignments.

3 Verify through the following steps that the ADM and ASIM are properly configured for connection to the equipment:

— Compare transmission control settings on S2, S3, and S4 of the ADM to the parameters of the connected data equipment.

— Compare transmission control settings of the ASIM to the parameters of the connected data equipment.

Note: Do not attempt to change the baud rate while a call is connected. The connection may lock up.

4 Verify through the following steps that the ADM, AIM, ASIM, and MCDS are not installed out of range from the DTE or the PE:

— Check cable distance between ADM, AIM, ASIM, and MCDS-AC and DTE.

— Compare wire-gauge selection jumper settings of ADM and MCDS-AC to the gauge of wire connecting ADM and MCDS-AC to PE.

— Check cable-distance between ADM, AIM, ASIM, and MCDS-AC and PE.

Note: In mixed wire-gauge installations, the jumpers should be set to match the longest wire gauge.

5 Verify through the following steps the integrity of the terminal equipment connected to the ADM, AIM, and MCDS-AC:

— Disconnect ADM from SL-1 terminal and check SL-1 terminal function.

— Check DTE.

— Check DCE.

6 Verify through the following steps that the DLC is properly configured:

— Check option-switch settings for Terminal Number (TN) in question.

— Check jumper pin positions.

— Check shelf installation (maximum of four DLCs or AILCs per shelf).

Operating procedures

Procedures 1 through 11 provide detailed action-and-response sequences for various types of calls from the ADM.

Procedure 12 provides detailed action-and-response sequences for various types of actions from the AIM.

Procedures 13 and 14 provide detailed action-and-response sequences for various types of actions from the ASIM.

However, the procedures are examples and only recommended, not required. In many of the procedures, especially those involving simultaneous voice and data calls, you are not restricted to following the sequences exactly.

Procedure 1
Originating an intraoffice data station call with a colocated ADM

Step	Action	Verification	Comment
	Start condition.	POWER lamp on.	Data station idle. Handset on-hook.
1	Press Data Directory Number (DDN) key.	DDN lamp on. DATA SHIFT lamp on. Dial tone on speaker.	Data station shifts to data mode. Further SL-1 set key depressions correspond to DDN.
2	Dial first digit of called DDN.	DIAL tone removed.	
3	Dial remaining digits of called DDN.	RINGBACK tone on speaker.	
4	Called DDN answers.	CONNECT lamp on. DATA SHIFT lamp off. RINGBACK tone off. CONNECT beep on speaker.	RINGBACK removed before connect beep is heard.
5	Press DATA SHIFT key.	DATA SHIFT lamp on.	
6	Press RLS key.	DDN, DATA SHIFT, and CONNECT lamps off.	Call disconnected. Data station shifts to voice mode.

Note: Once the called DDN answers and the DATA SHIFT lamp is extinguished, you can use the data station in voice mode.

Procedure 2
Originating an outgoing data station call (Modem Pool call) (Part 1 of 3)

Step	Action	Verification	Comment
	Start condition.	POWER lamp on.	Data station idle. Handset on-hook.
1	Press DDN key.	DDN lamp on. DATA SHIFT lamp on. Dial tone on speaker.	Data station shifts to data mode. Further SL-1 set key depressions correspond to DDN.
	Manual Modem Pool. (Go to step 11 for Automatic Modem Pooling [AMP]).		
2	Dial first digit of Modem Pool DDN.	DIAL tone removed.	
3	Dial remaining digits of Modem Pool DDN.	RINGBACK tone on speaker.	
4	Modem Pool DDN answers.	RINGBACK tone off. DATA SHIFT lamp off. MODEM CTRL lamp winks. CONNECT beep on speaker.	RINGBACK removed before 2-second connect tone is heard. Winking MODEM CTRL lamp indicates a modem is reserved. If the modem is reserved and an incoming call appears on voice Directory Number (DN), lift handset and answer the call. Put the voice call on hold and release data call if necessary. Modem Pool call can be made using secondary DN.
5	Press Prime Directory Number (PDN) key.	PDN lamp on. DIAL tone on speaker.	

Procedure 2
Originating an outgoing data station call (Modem Pool call) (Part 2 of 3)

Step	Action	Verification	Comment
6	Dial first digit of called remote computer.	DIAL tone off.	
7	Dial other digits of called remote computer.	RINGBACK tone on speaker.	
8	Modem of remote computer answers.	RINGBACK tone off. CARRIER tone on speaker.	
9	Press MODEM CTRL key.	MODEM CTRL and CONNECT lamps on. PDN lamp off. CARRIER tone off.	Carrier tone removed after brief interval. Call established. PDN automatically released from connection. PDN lamp goes dark. Station shifts to voice mode.
Automated Modem Pool (see note)			
10	Dial first digit.	DIAL tone removed.	All dialing is done from the DDN at the data station.With prefix dialing, this is the first digit of the 1- to 4-digit Modem Selection Prefix. With default dialing, this is the first digit of the trunk access code (TAC).
11	Dial remaining digits.		With Prefix Dialing, this includes the remainder of the Modem Selection Prefix, trunk access code, and the remote DN.With default dialing this is the remainder of the TAC and remote DN.

Procedure 2
Originating an outgoing data station call (Modem Pool call) (Part 3 of 3)

Step	Action	Verification	Comment
12	Modem of remote computer answers.	CONNECT lamp on. MODEM CTRL lamp on. PDN lamp off. CARRIER tone off. Call established.	PDN automatically released from connection. Station shifts to voice mode. Data station shifts to data mode.

Note: If it is necessary to initiate data features during the call, press the DATA SHIFT key to transfer to the DDN, initiate the feature, and then press the DATA SHIFT key to shift back to the voice DN.

Disconnect data call

13	Press DATA SHIFT key.	DATA SHIFT lamp on.	Data station shifts to data mode.
14	Press RLS key.	DDN, DATA SHIFT, CONNECT, and MODEM CTRL lamps off.	Call disconnected. Station idle.

Note: A data user may use either prefix or default dialing to access and connect the modem automatically. Prefix dialing allows the data user to choose the modem pool used to select the modem. The user dials a 1 to 4-digit Modem Selection Prefix, a TAC, and the remote computer port DN. If all resources are available, a data path is established between the data user and the host, and the connect lamp is lit. If either the modem pool or the trunk route is busy, Ring Again is applied. If the data call is incomplete because the remote port is unavailable or the call is misdialed, no call progress tones are received to indicate the problem source. Default dialing assumes that some data users normally wish to connect to the same modem pool for each call. In this case a default trunk route associated with a Modem Selection Prefix is stored against the user's TN. The user only needs to dial the TAC and the remote computer DN. The Meridian 1 system does the rest and treats the call as if the user had dialed the Modem Selection Prefix. The stored default Modem Selection Prefix can always be overridden by dialing another Modem Selection Prefix.

When a completely digital path is available from the data station to the remote computer port, an all Digital Connection Prefix can be designated if the Digital Trunk Interface (DTI) package is equipped. If the DTI prefix is used, a modem is not connected when the outgoing route is digital. Overflow tone is returned if the user attempts to use a voice frequency trunk to set up the call.

Procedure 3
Establishing simultaneous voice and data calls as viewed from an originating station (Part 1 of 2)

Step	Action	Verification	Comment
	Start condition, Data Station A.	POWER lamp on.	Data station idle. Handset on-hook. Station A = originating station. Station B = called station.
1	Lift handset at Data Station A.	PDN lamp on. DIAL tone on handset.	
2	Dial first digit of Data Station B PDN and Voice Directory Number.	DIAL tone off.	Dial tone removed.
3	Dial remaining digits of Data Station B PDN and VFDN.	RINGBACK on handset.	
4	Data Station B answers.	RINGBACK tone off.	RINGBACK removed. Two-way conversation.
5	Press DDN key at Data Station A.	DDN and DATA SHIFT lamps on. PDN lamp flashes. DIAL tone on handset.	PDN call automatically placed on hold. Data station shifts to data mode.
6	Dial first digit of Data Station B DDN.	DIAL tone off.	When equipped, AMP procedures may be used instead of steps 6 and 7 (see Procedure 2, steps 11–14).
7	Dial remaining digits of Data Station B DDN.	RINGBACK tone on handset.	
8	Data Station B DDN answers.	DATA SHIFT lamp off. CONNECT lamp on. RINGBACK off. CONNECT BEEP on handset.	PDN call is still on hold.

Procedure 3
Establishing simultaneous voice and data calls as viewed from an originating station (Part 2 of 2)

Step	Action	Verification	Comment
9	Press DATA SHIFT key at Data Station A.	DATA SHIFT lamp on.	Data Station A shifts to data mode.
10	Press RLS key.	DDN, DATA SHIFT, and CONNECT lamps off.	Data call disconnected. Voice call still on hold.
11	Press PDN key.	PDN lamp on.	Voice connection reestablished.
12	Ask Data Station B to place a call to your DDN at Data Station A.		Data Station B DDN makes a data call to Data Station A DDN. (This places voice call from Data Station B PDN on hold.)
13	As Data Station B completes dialing DDN of Data Station A.	DDN lamp winks. DATA BUZZ on handset.	
14	Press DDN key (ADM set to MANUAL answer).	DDN lamp on. CONNECT lamp on. PDN lamp flashes. DATA BUZZ off.	Data buzz removed after 2 s or when called ADM answers. (No DDN key depression is required if ADM is set to auto-answer.) PDN call was automatically placed on hold. (Two-way hold now exists between data stations in this case.) See step 12.
15	Press PDN key on Data Station B.	PDN lamp on.	Simultaneous voice and data calls established between Data Stations A and B.
16	Press RLS key.	PDN lamp off.	PDN call disconnected; PDN lamp goes dark.
17	Press DATA SHIFT key.	DATA SHIFT lamp on.	Data Station A shifts to data mode.
18	Press RLS key.	DDN, DATA SHIFT, and CONNECT lamps off.	DDN call disconnected. All ADM lamps go dark except POWER. Data station idle.

Procedure 4
Answering voice calls during data call setup (Part 1 of 2)

Step	Action	Verification	Comment
	Start condition.	DDN, DATA SHIFT, and POWER lamps on.	DDN call setup in progress.
1	Incoming call presented to PDN and VDN.	PDN and VFDN lamps flash.	
2	Press RLSF key.	DDN and DATA SHIFT lamps off.	Data call setup abandoned.
3	Lift handset.	PDN lamp on.	Two-way conversation on PDN.
4	Place PDN on hold.	PDN lamp flashes.	PDN on hold.
5	Press VDN key associated with flashing lamp.	VDN lamp on.	Two-way conversation on VDN. PDN call on hold.
6	Press HOLD key.	VDN lamp flashes.	VDN call placed on hold.
7	Press DDN key.	DDN and DATA SHIFT lamps on. DIAL tone on handset.	Data station shifts to data mode.
8	Dial first digit of required DDN.	DIAL tone off.	
9	Dial remaining digits of DDN.	RINGBACK tone on handset.	
10	Called DDN answers.	CONNECT lamp on. RINGBACK off. CONNECT BEEP on handset.	Data call established.
11	Press PDN key.	PDN lamp on.	Voice call reestablished.
12	Press RLS key.	PDN lamp off.	PDN call disconnected PDN lamp goes dark.

Procedure 4
Answering voice calls during data call setup (Part 2 of 2)

Step	Action	Verification	Comment
13	Press VFDN key next to flashing lamp.	VDN lamp on.	VDN call reactivated. Simultaneous voice and data call.
14	Press RLS key.	VDN lamp off.	VDN call disconnected.
15	Press DATA SHIFT key.	DATA SHIFT lamp on.	Data station shifts to data mode.
16	Press RLS key.	DDN, DATA SHIFT, and CONNECT lamps off.	DDN call disconnected. Data station idle.
17	Replace handset.		

Procedure 5
Automatic dialing

Step	Action	Verification	Comment
Programming Auto Dial			
	Start Condition.	POWER lamp on.	Data station idle. Handset on-hook.
1	Press DATA SHIFT key.	DATA SHIFT lamp on.	Data station shifts to data mode. Further SL-1 set key depressions correspond to DDN.
2	Press AUTO DIAL key once.	AUTO DIAL lamp flashes.	
3	Dial the data number to be programmed (up to 23 digits).		See *X11 Features and Services* (553-3001-306) for digit maximums per generic.
4	Press AUTO DIAL key again.	AUTO DIAL lamp off.	Number stored.
5	Press RLS or DATA SHIFT key.	DATA SHIFT lamp off.	Data station shifts back to voice mode.
Using Auto Dial			
6	Press DDN key.	DDN and DATA SHIFT lamps on. DIAL tone on speaker.	Data station shifts to data mode.
7	Press AUTO DIAL key.	DIAL tone off. RINGBACK tone on speaker.	After digits are outpulsed, Ringback or busy tone is heard.
8	Called DDN answers.	DATA SHIFT lamp off. CONNECT lamp on. RINGBACK tone off. CONNECT BEEP on speaker.	Data call established. Set switched to voice mode.
9	Press DATA SHIFT key.	DATA SHIFT lamp on.	Data station shifts to data mode.
10	Press RLS key.	DDN, DATA SHIFT, and CONNECT lamps off.	Data station shifts to voice mode. Data station idle.

Procedure 6
Call Forward

Step	Action	Verification	Comment
	Start condition.	POWER lamp on.	Data station idle. Handset on-hook.
1	Press DATA SHIFT key on Data Station A.	DATA SHIFT lamp on.	Data station shifts to data mode.
2	Press CALL FWD key once.	CALL FWD lamp flashes.	
3	Dial DDN of Data Station B where calls will be forwarded.		
4	Press CALL FWD key again.	CALL FWD lamp on.	Feature activated.
5	Press RLS or DATA SHIFT key.	DATA SHIFT lamp off.	Data station shifts back to voice mode.
All calls made to Data Station A DDN will be presented to Data Station B.			
Release Call Forward			
6	Press DATA SHIFT key.	DATA SHIFT lamp on.	Data station shifts to data mode.
7	Press CALL FWD key.	CALL FWD lamp off.	Feature canceled.
8	Press RLS or DATA SHIFT key.	DATA SHIFT lamp off.	

Procedure 7
Ring Again (Part 1 of 2)

Step	Action	Verification	Comment
	Start condition. Establish an active DDN call between Data Stations B and C.	POWER lamp on.	Data station idle Handset on-hook.
1	Press DDN key at Data Station A and dial Data Station B.	DDN and DATA SHIFT lamps on. BUSY tone on speaker.	
2	Press RING AGAIN key once.	DDN and DATA SHIFT lamps off. RING AGAIN lamp on.	Data call attempt disconnected. Data Station A shifts back to voice mode.
3	Disconnect DDN call between Data Stations B and C.	RING AGAIN lamp flashes. 2-SEC BUZZ on speaker.	Data Station A is alerted that Data Station B is free.
4	Press DDN key.	DDN and DATA SHIFT lamps on.	
5	Press RING AGAIN key.	RINGBACK tone on speaker.	Data station B DDN is automatically dialed.
6	Data Station B answers.	DATA SHIFT lamp off. CONNECT lamp on. RINGBACK tone off. CONNECT BEEP on speaker.	Two-way data call established. Data station in voice mode.
7	Press DATA SHIFT key.	DATA SHIFT lamp on.	Data station in data mode.

Procedure 7
Ring Again (Part 2 of 2)

Step	Action	Verification	Comment
8	Press RLS key.	DDN, DATA SHIFT, and CONNECT lamps off.	Data station shifts back to voice mode. Data station idle.
9	Press RING AGAIN key.	RINGBACK tone on speaker.	Data Station B DDN is automatically dialed.
10	Data Station B answers.	DATA SHIFT lamp off. CONNECT lamp on. RINGBACK tone off. CONNECT BEEP on speaker.	Two-way data call established. Data station in voice mode.
11	Press DATA SHIFT key.	DATA SHIFT lamp on.	Data station in data mode.
12	Press RLS key.	DDN, DATA SHIFT, and CONNECT lamps off.	Data station shifts back to voice mode. Data station idle.

Procedure 8
Speed Call (Part 1 of 2)

Step	Action	Verification	Comment
	Start condition.	POWER lamp on.	Data station idle. Handset on-hook.
1	Press DATA SHIFT key.	DATA SHIFT lamp on.	Data station shifts to data mode.
2	Press SPEED CALL key once.	SPEED CALL lamp flashes.	If SPEED CALL lamp does not flash, this data station is not a Speed Call Controller.
3	Enter 1-, 2-, or 3-digit code for the number to be stored.		See *X11 Features and Services* (553-3001-306) for available list sizes per number sizes stored.
4	Dial the number to be programmed.		See *X11 Features and Services* (553-3001-306) for maximum digits per list size (up to 32).

Procedure 8
Speed Call (Part 2 of 2)

Step	Action	Verification	Comment
5	Press SPEED CALL key again.	SPEED CALL lamp off. DATA SHIFT lamp on.	Number stored.
6	Press RLS or DATA SHIFT key.	DATA SHIFT lamp off.	Data station shifts back to voice mode.
7	Press DDN key.	DDN and DATA SHIFT lamps on. DIAL tone on speaker.	
8	Press SPEED CALL key.	SPEED CALL lamp on. DIAL tone off.	
9	Dial 1-, 2-, or 3-digit code.	SPEED CALL lamp off; RINGBACK tone on speaker.	Number automatically dialed.
10	Called station answers.	DATA SHIFT lamp off. CONNECT lamp on. RINGBACK tone off. CONNECT BEEP on speaker.	Two-way call established.
11	Press DATA SHIFT key.	DATA SHIFT lamp on.	Data station in data mode.
12	Press RLS key.	DDN, DATA SHIFT, and CONNECT lamps off.	Data station shifts back to voice mode. Data station idle.

Hot Line calls

Hot Line is used with keyboard dialing from QMT8 asynchronous ADM for calling local hosts. It is also used in the synchronous mode in response to Digitone Receiver (DTR) in inbound modem pool or calling local hosts.

Asynchronous mode

There are three slight variations of the Hot Line feature as follows:

- If the S4.1 and 2 are on and S4.3 is off, then a DTR transition from off to on invokes Hot Line to dial the number.
- If the S4.1 and S4.2 are on and S4.3 is off and the DTR is already true, then carriage return (CR) activates Hot Line (see Procedure 9).
- If the S4.1, S4.2 and S4.3 are all on, then carriage return activates Hot Line (see step procedure below).

Synchronous mode

If the S4.1 and S4.2 are on and S4.3 is off, then a DTR transition from off to on activates Hot Line to dial the number.

Miscellaneous information

- Ensure that the data terminal is on-line and that both the terminal and the ADM are turned on.
- Ensure that the switch settings for speed and mode on the terminal and the ADM match.
- Ensure that the ADM is set up for Hot Line operation with S4.1 and S4.2 switches set to on.
- Ensure that the predesignated number is programmed in the Meridian 1 data base against the Hot Line (Autodial) key (number three).

Procedure 9
Hot Line call

Step	Action	Verification	Comment
	Start condition.	POWER lamp on.	Data station active. Handset on hook.
1	Enter (CR).	DDN and DATA SHIFT lamps on.	HOT LINE OPERATION appears on screen.
2	Called number answers.	CONNECT lamp on. DATA SHIFT lamp off.	CALL CONNECTED appears on screen.
3	Follow login procedures.		Host echoes all typed input.
4	Proceed with data session.		

Procedure 10
Change of speed or mode setting, or both, on SW2 during active call

Step	Action	Verification	Comment
	Start condition. Active data call with local computer.	DDN, CONNECT, and POWER lamps on.	Data station active. Handset on hook. (If the call is with a remote computer, MODEM CONTROL lamp will also be steadily lit. See Note.)
1	Change speed settings on the terminal and ADM.		
2	Change mode setting on SW2.		All parameters except auto-answer can be set. New mode is in effect.
3	Press DDN key.		New speed is in effect.

Note: This asynchronous feature applies only for in-house calls. Any attempt to use this feature with a modem pooling call will result in the data call being dropped.

Keyboard dialing

Keyboard dialing (KBD) is provided by the colocated QMT8 and is only applicable to ASCII, asynchronous start-stop character mode, and interactive terminals equipped with EIA RS-232-C interface.

It is not available for synchronous or block mode terminals.

KBD provides the following capabilities:

- Call origination to local and remote hosts
- Ring Again capability
- Hot Line calling to local hosts

Miscellaneous information:

- Ensure that the data terminal is on-line and both the terminal and the ADM are turned on.
- Ensure that the switch settings for speed and mode on the terminal and the ADM match.
- User inputs may be in either lower or upper case and must be terminated by carriage return (CR), enter, or equivalent command.
- All inputs are echoed on the terminal screen.
- There is no provision to edit the input.
- Use "Control + Z" if it is necessary to abandon the call during the call setup stage.
- All prompts during call setup are in upper case, are preceded by a line feed, and are followed by (CR) and line feed.

Procedure 11
Keyboard dialing from colocated ADM (QMT8) data station (Part 1 of 4)

Step	Action	Verification	Comment
	Start condition.	POWER lamp on.	Data station idle. Terminal and ADM power on.
1	Enter (CR).	DDN and DATA SHIFT lamps on. DIAL tone on speaker.	The ADM senses the change and prepares to receive the DDN (Note 3). ENTER NUMBER appears on screen.
2	HOT LINE active?	CONNECT lamp on. DATA SHIFT lamp off.	HOT LINE OPERATION appears on screen first, and when Called Number answers, CALL CONNECTED appears on screen. Go to step 6. If not, continue (Note 1).
Call to local host or AMP calling			
3	Enter first digit.	DIAL tone off.	Continue or go to step 9.
4	Enter subsequent digits.		All numeric input, # and * are accepted. During call setup, all legal user input appears on terminal screen (Note 4).
5	Enter (CR).	RINGBACK tone on speaker.	ADM sends digits to Meridian 1 which places call to host (Note 2).
6	Called host answers.	DATA SHIFT lamp off. CONNECT lamp on. RINGBACK tone off. Short BEEP tone on.	CALL CONNECTED appears on screen. (If host < host or trunk with AMP > is busy, see step 18.)
7	Follow login procedures.		Host echoes all typed input.
8	Proceed with data session.		Host echoes all typed input. Go to step 21 for disconnect procedures.

Procedure 11
Keyboard dialing from colocated ADM (QMT8) data station (Part 2 of 4)

Step	Action	Verification	Comment
Call to remote host (multiple hosts)			
9	Enter subsequent digits.		All numeric input, # and * are accepted. During call setup all legal user input appears on terminal screen.
10	Enter (CR).	RINGBACK tone on speaker.	If called modem is free, tone is heard. (If it is busy, see step 18.)
11	ADM connected to modem answers.	RINGBACK tone off. MODEM CTRL lamp winks. PDN lamp on. CONNECT BEEP tone on.	Enter (CR) when DN IDLE appears on screen (Note 5).
12	Enter (CR).	DIAL tone on speaker.	ENTER REMOTE NUMBER appears on screen and PDN lights.
13	Enter remote number digits and (CR).	DIAL tone off. RINGBACK tone on.	Call is placed to the remote number. If it is free, Ringback tone is received. PDN is on. See step 18.
14	Remote host answers.	RINGBACK tone off. CARRIER tone on speaker.	Tone heard from remote modem. Enter (CR) AT CARRIER tone.
15	Enter (CR).	DATA SHIFT lamp off. MODEM CTRL lamp on. CONNECT lamp on. CARRIER tone off. PDN lamp off.	CALL CONNECTED appears on screen. PDN is off.
16	Follow login procedures.		Host echoes all typed input.
17	Proceed with data session.		Host echoes all typed input.

Procedure 11
Keyboard dialing from colocated ADM (QMT8) data station (Part 3 of 4)

Step	Action	Verification	Comment
Ring Again active (Notes 1 and 2)			
18	Called host busy.	Busy tone on speaker. DDN lamp on. Ring Again (RA) lamp on.	RING AGAIN PLACED—CALL RELEASED appears on screen when called modem is busy. Ring Again is placed automatically in 5 seconds. If the called number is a no-answer or an illegal number, CALL RELEASED appears on the screen and the DDN lamp goes dark. When the AMP feature is equipped and the remote data port is unavailable or the call was misdialed, no progress tones are received.
19	Called port is now free.	RA lamp flashes. BUSY tone off. RING AGAIN BUZZ on speaker.	
20	Enter (CR).	DATA SHIFT lamp on. Brief DIAL tone on speaker. RINGBACK on speaker.	After Ringback on speaker, CALL CONNECTED appears on screen. Return to steps 7 or 16.

Procedure 11
Keyboard dialing from colocated ADM (QMT8) data station (Part 4 of 4)

Step	Action	Verification	Comment
Call disconnect procedures			
21	Enter a disconnect command to terminate session and to initiate call disconnect by the host (for example, use disconnect commands such as Logo or Control + D). This causes the called terminal to disconnect the call by dropping DTR. or Operate terminal LINE or POWER switch to OFF. or Operate DS and RLS keys in sequence.		
22	Call disconnected.	DDN and DATA SHIFT lamps off.	CALL RELEASED appears on screen. All ADM lamps except POWER go dark.

Note 1: Speed Call, Hot line, Autodial, Call Forward, and Ring Again can only be programmed with the DATA SHIFT key (DS) and the relevant feature keys of the SL-1 set.

Note 2: If the called port is busy, the Meridian 1 system returns a busy tone. When Ring Again is activated by the SL-1 set, the Y answer to the screen prompt causes the ADM to retry the call.

Note 3: If the user wants to abandon the call during the call setup stage, press CONTROL + Z.

Note 4: During call setup, there is a maximum number of characters in a line. The ADM ignores all characters entered beyond this limit.

Note 5: If a data call is being set up and you receive a voice call is received, answer the voice call and then put it on hold. Release the data call with CONTROL + Z if necessary.

Note 6: If a remote terminal is calling into an inbound modem pool and is calling multiple hosts, the ADM serving the modems must be set up in the non-hot line mode and the caller must enter the DN of the called host (steps 12 and 13). If the remote is calling a single host, the ADM serving the modem must be set up in the Hot Line mode with the DN programmed to the DN of the called host (skip step 13).

Keyboard dialing from the AIM data station

Keyboard dialing (KBD) is only applicable to ASCII, asynchronous start-stop character mode, and interactive terminals equipped with an EIA RS-232-C interface.

It is not available for synchronous or block mode terminals.

The AIM and KBD provide the following capabilities:

- Call origination to local and remote hosts
- Ring Again
- Autodial data calling to local hosts
- Data baud rate of 110, 150, 300, 600, 1200, 2400, 4800, 9600, 19200 (110 and 150 bps are not supported for AIM and PCIC to AIM and PCIC calling)
- 2 stop-bits for a baud rate of 110 and 1 bit for all other baud rates
- 8 data bits and no parity
- Auto-answer (see Note 6 under Procedure 12)

Menu information

The AIM is easy to use because user friendly prompts guide you through the operating steps. Two menu provide a choice of call or function operation.

Use the Main menu, shown below, to determine the call or function type:

A—AUTODIAL R—REMOTE CALL
(CR)—AUTODIAL S—SPEED CALL
C—CALL M—MODIFY
D—DISPLAY
SELECT:

The Modify menu shown below appears on the screen when M is selected from the Main menu:

A—AUTODIAL NUMBER R—REMOTE LOOPBACK
S—SPEED NUMBER Q—QUIT MODIFY
SELECT:

Each menu item for call setup and display or modify functions are shown separately in this procedure.

Miscellaneous information

- Ensure that the data terminal is on-line and both the terminal and the AIM are turned on.
- User inputs may be in either lower or upper case and must be terminated by (CR), enter, or equivalent command.
- You can dial the call by using the same alphanumeric combinations that exist on a standard dial pad, such as ABC = 2. The & and # are accepted and treated as touch pad items. Illegal characters (that is, spaces) result in an error message "Invalid Number."
- All inputs are echoed on the terminal screen.
- The input may be edited with BACKSPACE (BS), DELETE LINE (DEL) keys, or their equivalents.
- All prompts during call setup are in upper case and are preceded by a line feed. Those that need input are followed by a colon and space while others are followed by (CR) and line feed.
- Use CONTROL + Z if it is necessary to abandon the call during call setup.
- If the call cannot be completed and the station is not busy, SERVICE UNAVAILABLE CALL RELEASED is the only prompt provided.
- If the prompt REENTER is received at any time, return to the menu.
- When the Digit Display feature is assigned to the DN, the digits NNNN are displayed as the Meridian 1 system sends them.

Procedure 12
Keyboard dialing from AIM data station (Part 1 of 7)

Step	Action	Terminal Echo	Prompt	Comment
	Start condition.			Data station idle. Terminal and AIM power on.
1	Enter (CR).		A—AUTODIAL (CR)—AUTODIAL C—CALL D—DISPLAY SELECT:	R—REMOTE CALL S—SPEED CALL M—MODIFY
This first (CR) also causes the AIM to autobaud to the rate set at the DTE.				
2	Data Autodial active?			Go to step 21. If not, continue (Note 8).
3	Speed Call active?			Go to step 22. If not, continue or go to step 9 (Note 8).
Call to local host or AMP calling				
4	Enter C (CR).	C	ENTER NUMBER:	
5	Enter number XXXX (CR).	XXXX	CALLING NNNN	All alphabetic and numeric input, #, and * are accepted. During call setup, all legal user input appears on terminal screen (Note 4). AILC sends digits to Meridian 1, which places call to host. Meridian 1 sends digits NNNN back to the AILC.
6	Called host answers (if busy see steps 16 or 20).		CALL CONNECTED SESSION STARTS	Data modules perform handshake, and data channel becomes transparent (Note 2).
7	Follow login procedures.			Data session begins.
8	Proceed with data session.			Host echoes all typed input. Go to step 34 for disconnect procedures.

Procedure 12
Keyboard dialing from AIM data station (Part 2 of 7)

Step	Action	Terminal Echo	Prompt	Comment
Call to remote host (multiple hosts)				
9	Enter R (CR).	R	ENTER NUMBER FOR MODEM:	
10	Enter modem Number XXXX (CR).	All digits typed.	Calling NNNN	
11	ADM connected to modem answers.		MODEM RESERVED ENTER REMOTE NUMBER:	Modem is reserved (Note 5).
12	Enter remote number digits (CR).	All digits typed.	CALLING NNNNNNN;	The Meridian 1 places a call to the remote number.
13	Remote modem answers.		CALL CONNECTED SESSION STARTS	The call is connected. (If busy, go to steps 16 or 20.)
14	Follow login procedures.			Data session begins.
15	Proceed with data session.			Host echoes all typed input. Go to step 34 for disconnect procedures.
Host busy—Ring Again active? (Notes 1 and 2)				
16	Called host busy.	Number digits.	CALLING NNNN BUSY. RING AGAIN (Y/N)?	
17	Enter Y (CR).	Y	RING AGAIN PLACED	The AIM uses the Meridian 1 Ring Again feature to retry the call (Note 7).

Procedure 12
Keyboard dialing from AIM data station (Part 3 of 7)

Step	Action	Terminal Echo	Prompt	Comment
18	Called port becomes free.		DATA STATION XXXX NOW AVAILABLE. RING AGAIN Y/N/(CR)	If the DTE accepts bell characters, bell in DTE rings.
19	Enter (CR).		CALLING NNNN	Meridian 1 places call. (Go to steps 6 or 13.)
Host busy—no Ring Again				
20	Called host busy.		SERVICE UNAVAILABLE CALL RELEASED	
Data Autodial active? Local host only (Note 1)				
21	Enter A (CR) or (CR).		CALLING NNNN	AIM sends DDN and Autodial indication. Meridian 1 places the call to the predesignated number. Return to step 6.
Speed Call active?				
All speed call numbers must be programmed in database against the user DDN.				
22	Enter S (CR).	S	ENTER ACCESS CODE:	
23	Enter X (CR).	X	CALLING N>NNNNNNN	AIM sends DDN and Speed Call index. Return to steps 6 or 13.

Procedure 12
Keyboard dialing from AIM data station (Part 4 of 7)

Step	Action	Terminal Echo	Prompt	Comment
Display active?				
Used to display terminal parameters of the user DDN.				
24	Enter D (CR).	D	BAUD RATE (110-9600) =1200 REMOTE LOOPBACK (Y/N/(CR) =N AUTODIAL NO =NNNN A—AUTODIAL (CR)—AUTODIAL C—CALL D—DISPLAY SELECT:	 R—REMOTE CALL S—SPEED CALL M—MODIFY

The baud rate must be manually reset at the DTE. (See User Guide.)

— Power down AIM and DTE (or enter BREAK or drop DTR).

— Change baud rate at DTE.

— Power up AIM and DTE.

— Enter (CR) to autobaud.

You can verify the baud rate after resetting by autobauding again with (CR) and again using the D command. The other parameters are modified as shown in the following steps.

Modify active?				
Used to modify AIM settings to match terminal parameters.				
25	Enter M (CR).	M	A—AUTODIAL NUMBER S—SPEED NUMBER SELECT:	R—REMOTE LOOPBACK Q—QUIT MODIFY MODIFY AUTODIAL

Procedure 12
Keyboard dialing from AIM data station (Part 5 of 7)

Step	Action	Terminal Echo	Prompt	Comment
Modify Autodial				
26	Enter A (CR).	A	AUTODIAL NO =	
27	Enter new number (CR).	New Number	A—AUTODIAL NUMBER S—SPEED NUMBER SELECT:	R—REMOTE LOOPBACK Q—QUIT MODIFY Autodial number is changed.
Modify Speed Call		**List controller only**		
28	Enter S (CR).	S	ENTER ACCESS CODE:	
29	Enter X (CR).	X	SPEED NUMBER:	
30	Enter New Number (CR).	New number	A—AUTODIAL NUMBER SPEED NUMBER SELECT:	R—REMOTE LOOPBACK Q—QUIT MODIFY New number is set.
Modify remote loopback				
31	Enter R (CR).	R	REMOTE LOOPBACK Y or N (CR):	
32	Enter Y or N (CR).	Y or N	A—AUTODIAL NUMBER S—SPEED NUMBER SELECT:	R—REMOTE LOOPBACK Q—QUIT MODIFY Remote loopback is Y or N.
Quit Modify				
33	Enter Q (CR).	Q	A—AUTODIAL (CR)—AUTODIAL C—CALL D—DISPLAY SELECT:	R—REMOTE CALL S—SPEED CALL M—MODIFY Try any other feature or place a data call.

Procedure 12
Keyboard dialing from AIM data station (Part 6 of 7)

Step	Action	Terminal Echo	Prompt	Comment
Call disconnect procedures				
34	Enter a disconnect command to end session and to initiate call disconnect by the host terminal (such as LOGO or Control + D.). This causes host to drop DTR and release the connection (Note 9). Operate break key for 1.6 seconds. (For terminals with overlapping timed breaks, it is necessary to operate the break key several times. This method does not work on terminals with non-overlapping timed breaks.) At the terminal, turn LINE/LOCAL to LOCAL or POWER switch to POWER OFF Turn AIM off for about 1.6 seconds.			
35	Call disconnected.		CALL RELEASED	The prompt only appears if AIM is on.

Note 1: The Autodial and Speed Call numbers can be modified from the keyboard or with a service change to the Meridian 1 database. Ring Again can be activated and originated from the terminal keyboard.

Note 2: No call progress tones are provided during call setup.

Note 3: If the user wants to abandon the call during call setup, use Control +Z (simultaneously press Control and Z keys).

Note 4: During call setup, there is a maximum number of characters in a line. If this limit is exceeded, the AIM considers the line as invalid input and prompts the user to retype the last line.

Note 5: If a remote terminal is calling via the incoming modem pool to multiple hosts, the ADM serving the modems must be set up in the non-autodial (non-Hot Line) mode and the caller must input the DN of the called host (step 12). If the remote terminal is calling a single host, the ADM serving the modem must be set up in the autodial (Hot Line) mode with the DN programmed to the DN of the called host (skip step 12).

Note 6: Auto-answer: The terminal and the AIM must be powered up with the terminal on-line. An incoming call is answered automatically if the AIM is not in the process of establishing a call or in the Modify Display feature mode.

If the terminal is autobauded, mismatching the baud rate between the incoming call and the local terminal causes the call to be released:

Terminal not autobauded.	Call comes in.	INCOMING CALL CONNECTED four bell characters sound	Call established even though baud does not match.

Procedure 12
Keyboard dialing from AIM data station (Part 7 of 7)

Step	Action	Terminal Echo	Prompt	Comment
Terminal autobauded.		Call comes in with matching baud rate.	INCOMING CALL CONNECTED	Call established.
		Call comes in with baud rate not matching.	INCOMPATIBLE INCOMING CALL CALL RELEASED	Call not established.

Note 7: When Ring Again has been placed, no further action should be taken unless the user wants to cancel Ring Again.

Note 8: If Speed Call or Autodial features are denied to the DN, attempts to use them will result (after a pause) in the prompt "SERVICE UNAVAILABLE, REENTER."

Note 9: For disconnection by a local host, the device (ADM or MCDS) connected to the host must be configured to monitor the Data Terminal Ready (DTR) signal from the host. For disconnection by a remote host, the modem connected to the host must be configured to monitor the DTR signal from the host.

Note 10: For QPC430E and later vintages, there are changes in keyboard dialing prompts. These prompts are similar to ASIM (QMT11) and M2000 data options. See the AIM/AILU User Guide for information.

Keyboard dialing from the ASIM data station

Keyboard dialing is only applicable to ASCII, asynchronous start-stop character mode, and interactive terminals equipped with EIA RS-232-C interface. It is not available for synchronous or block mode terminals.

The ASIM and KBD provide the following capabilities:

- Call origination to local and remote hosts
- Ring Again
- Autodial data calling to local hosts
- Speed Call
- Auto-answer (Note 6 in Procedure 13)
- Manual answering of incoming calls (Note 10 in Procedure 13)
- Asynchronous mode autobauding. On initial power up, a default speed, as selected by the SYNC speed switch setting, of 1200, 2400, 4800, 9600, or 19200 bps is used. If the switch is not set to any of the five speed settings, the ASIM defaults to 9600 bps. After autobauding once, the ASIM remembers the current speed, and if not again autobauded, continues to use that speed.
- Asynchronous Mode Autoparity. The ASIM detects the speed on the carriage return (CR) character. If the parity of the terminal matches the default (8 bits, no parity), the ASIM echoes a legible prompt on the screen. If the parity does not match, an illegible prompt appears on the screen. When this happens, the user should enter a period and a (CR) to force the ASIM to detect the parity and to echo a legible prompt on the screen.

  The ASIM returns to the default mode when

  — The terminal is powered off and on.

  — After Control + Z, Break, Release, DTR off, and call disconnections.
- Asynchronous data baud rate of 110, 150, 300, 600, 1200, 2400, 4800, 9600, or 19200 bps

- Synchronous data baud rate of 1200, 2400, 3600, 4800, 7200, 9600, 19200, 38400, 40800, 48000, and 56000 bps
- Two stop-bits for 110 baud and one bit for all other baud rates

Menu information

The ASIM with keyboard dialing is easy to use because the user friendly prompts guide you through the operating steps. Two menus provide a choice of call or function operation.

Use the Main menu, shown below, to determine the call or function type:

A—AUTODIAL D—DISPLAY
(CR)—AUTODIAL S—SPEED CALL
C—CALL M—MODIFY
SELECT:

The Modify menu shown below appears on the screen when "M" is selected from the Main menu:

A—AUTODIAL NUMBER R—REMOTE LOOPBACK
S—SPEED NUMBER Q—QUIT MODIFY
SELECT:

Each menu item for call setup and display or modify functions are shown separately in this procedure.

Miscellaneous information

- Ensure that the data terminal is on-line and that both the terminal and the ASIM are powered on.
- User inputs may be in either lower or upper case and must be terminated by (CR), enter, or an equivalent command.
- You can dial the call by using the numeric combinations of the keyboard. The & and # are accepted and treated as touch pad items. Illegal characters (that is, spaces) result in an error message "Invalid Number."
- All inputs are echoed on the terminal screen.
- The input may be edited with BACKSPACE (BS), DELETE LINE (DEL) keys, or their equivalents.
- All prompts during call setup are in upper case and are preceded by a line feed. Those that need input are followed by a colon and space while others are followed by a semicolon or (CR) and line feed.
- Use Control + Z if it is necessary to abandon an asynchronous call during call setup.
- If the call cannot be completed and the station is not busy, SERVICE UNAVAILABLE CALL RELEASED is the only prompt provided.
- If the prompt REENTER is received at any time, return to the menu.
- When the Digit Display feature is assigned to the DN, the digits NNNN are displayed as the Meridian 1 system sends them.

Procedure 13
Keyboard dialing from the ASIM data station (Part 1 of 9)

Step	Action	Terminal Echo	Prompt	Comment
	Start condition.			Data station idle. Terminal and ASIM power on.
1	Enter (CR).		ENTER NUMBER OR H (FOR HELP)	Go to step 6 or 10 if the number is to be entered instead of H. If you are familiar with the menu, you may use a command such as C, (CR), A, and S, instead of H. Go to step 3, 4, or 5 if you enter MENU instead of H.
This first (CR) also causes the ASIM to autobaud to the SYNC speed switch setting or to the default of 9600 bps or to the previous rate.				
2	Enter H (CR).	A—AUTODIAL (CR)—AUTODIAL C—CALL SELECT:	D—DISPLAY S—SPEED CALL M—MODIFY	
3	Data Autodial Active?			If yes, go to step 22. If not, continue (Note 8).
4	Speed Call Active?			If yes, go to step 23. If not, continue (Note 8).
5	Enter C (CR).	C	ENTER NUMBER:	

Procedure 13
Keyboard dialing from the ASIM data station (Part 2 of 9)

Step	Action	Terminal Echo	Prompt	Comment
Call to local host or AMP calling		**Go to step 10 for call to remote host.)**		
6	Enter number XXXX (CR).	XXXX	CALLING NNNN DDN lamp on	All numeric input, #, and & are accepted. During call setup, all legal user input appears on terminal screen (Note 4). ASIM sends digits to Meridian 1, which places call to host. Meridian 1 sends digits NNNN back to the ASIM.
7	Called host answers (if busy, see steps 16 or 21).		CALL CONNECTED SESSION STARTS CONNECT lamp on RING AGAIN lamp off	Data modules perform handshake, and data channel becomes transparent (Note 2).
8	Follow login procedures.			Data session begins.
9	Proceed with data session.			Host echoes all typed input. Go to step 35 for disconnect procedures.

Procedure 13
Keyboard dialing from the ASIM data station (Part 3 of 9)

Step	Action	Terminal Echo	Prompt	Comment
Call to remote host		**Multiple hosts**		
10	Enter modem number XXXX (CR).	All digits typed.	Calling NNNN DDN lamp on	
11	ADM connected to modem answers.		MODEM RESERVED ENTER REMOTE NUMBER:	Modem is reserved (Note 5).
12	Enter remote number digits (CR).	All digits typed.	CALLING NNNNNNN;	The Meridian 1 places a call to the remote number.
13	Remote modem answers.		CALL CONNECTED SESSION STARTS CONNECT lamp on RING AGAIN lamp off	The call is connected. (If busy, go to steps 16 or 21.)
14	Follow login procedures.			Data session begins.
15	Proceed with data session.			Host echoes all typed input. Go to step 35 for disconnect procedures.
Host busy—Ring Again active? (Notes 1 and 2)				
16	Called host busy.	Number digits.	CALLING NNNN BUSY RING AGAIN (Y/N)? RING AGAIN lamp on.	
17	Enter Y (CR).	Y	RING AGAIN PLACED RELEASED RING AGAIN lamp off DDN lamp off	The ASIM uses the Meridian 1 Ring Again feature to retry the call (Note 7).
18	Enter (CR).			Necessary to autobaud ASIM.

Procedure 13
Keyboard dialing from the ASIM data station (Part 4 of 9)

Step	Action	Terminal Echo	Prompt	Comment
19	Called port becomes free.		DATA STATION NOW AVAILABLE RING AGAIN (Y/N) RING AGAIN lamp winks	If the DTE accepts bell characters, bell in DTE rings.
20	Enter Y(CR).		DDN lamp on	Call placed (go to step 7 or 13).
Host busy—no Ring Again				
21	Called Host busy.		SERVICE UNAVAILABLE CALL RELEASED	
Data Autodial active?		**Local host only (Note 1)**		
22	Enter A (CR) or (CR).		CALLING NNNN DDN lamp on	ASIM sends DDN and Autodial indication. Meridian 1 places the call to the predesignated number. Return to step 7.
Speed Call active?				
All speed call numbers must be programmed in database against the user DDN.				
23	Enter S (CR).	S	ENTER ACCESS CODE:	
24	Enter X (CR).	X	CALLING N > NNNNNNN DDN lamp on	ASIM sends DDN and Speed Call index. Return to steps 7 or 13.

Procedure 13
Keyboard dialing from the ASIM data station (Part 5 of 9)

Step	Action	Terminal Echo	Prompt	Comment
	Display active?			
	Used to display terminal parameters of the user DDN.			
25	Enter D (CR).	D	BAUD RATE (110-9600) = NNNN REMOTE LOOPBACK (Y/N/(CR) = N AUTODIAL NO = NNNN A—AUTODIAL D—DISPLAY (CR)—AUTODIAL S—SPEED CALL C—CALL M—MODIFY SELECT:	
	The baud rate must be manually reset at the DTE. Do not attempt to reset while a call is connected (See User Guide). — Power down ASIM and DTE (or enter BREAK or drop DTR). — Change baud rate at DTE. — Power up ASIM and DTE. — Enter (CR) to autobaud. You can verify the baud rate after resetting by autobauding again with (CR) and again using the D command. The other parameters are modified as shown in the following steps.			
	Modify active?			
	Used to modify ASIM settings to match terminal parameters.			
26	Enter M (CR).	M	A—AUTODIAL NUMBER S—SPEED NUMBER SELECT:	R—REMOTE LOOPBACK Q—QUIT MODIFY If you enter A, go to step 27 S, go to step 29 R, go to step 32 Q, go to step 34

Procedure 13
Keyboard dialing from the ASIM data station (Part 6 of 9)

Step	Action	Terminal Echo	Prompt	Comment
Modify Autodial				
27	Enter A (CR).	A	AUTODIAL NO =	
28	Enter new number (CR).	New number	A—AUTODIAL NUMBER S—SPEED NUMBER SELECT:	R—REMOTE LOOPBACK Q—QUIT MODIFY Autodial number is changed.
Modify Speed Call		**List controller only**		
29	Enter S (CR).	S	ENTER ACCESS CODE:	
30	Enter X (CR).	X	SPEED NUMBER:	
31	Enter new number (CR).	New number	A—AUTODIAL NUMBER S—SPEED NUMBER SELECT:	R—REMOTE LOOPBACK Q—QUIT MODIFY New number is set.
Modify remote loopback				
32	Enter R (CR).	R	REMOTE LOOPBACK Y or N (CR):	
33	Enter Y or N (CR).	Y or N	A—AUTODIAL NUMBER S—SPEED NUMBER SELECT:	R—REMOTE LOOPBACK Q—QUIT MODIFY Remote loopback is Y or N.

Procedure 13
Keyboard dialing from the ASIM data station (Part 7 of 9)

Step	Action	Terminal Echo	Prompt	Comment
Quit Modify				
34	Enter Q (CR).	Q	A—AUTODIAL (CR)—AUTODIAL C—CALL D—DISPLAY SELECT:	R—REMOTE CALL S—SPEED CALL M—MODIFY Try any other feature or place a data call.
35	Enter a disconnect command, such as LOGO or Control + D, to end session and to initiate call disconnect by the host terminal. This causes host to drop DTR and release the connection (Note 9). or Operate ASIM RELEASE key. or At the terminal, turn LINE/LOCAL to LOCAL or POWER switch to POWER OFF. or Power down ASIM for about 1.6 seconds. or In asynchronous operation, operate break key for 1.6 seconds. (For terminals with overlapping timed breaks, it is necessary to operate the break key several times. This method does not work on terminals with non-overlapping timed breaks.)			
Call disconnect procedures				
36	Call disconnected.		CALL RELEASED	The prompt only appears if ASIM is on (Note 11).

Procedure 13
Keyboard dialing from the ASIM data station (Part 8 of 9)

Step	Action	Terminal Echo	Prompt	Comment
	Note 1: The Autodial and Speed Call numbers can be modified from the keyboard or with a service change to the Meridian 1 database. Ring Again can be activated and originated from the terminal keyboard.			
	Note 2: No call progress tones are provided during call setup.			
	Note 3: If the user wants to abandon the call during call setup, use Control + Z (simultaneously press Control and Z keys).			
	Note 4: During call setup, there is a maximum number of characters in a line. If this limit is exceeded, the ASIM considers the line as invalid input and prompts the user to retype the last line.			
	Note 5: If a remote terminal is calling via the incoming modem pool to multiple hosts, the ADM serving the modems must be set up in the non-autodial (non-Hot Line) mode and the caller must enter the DN of the called host (step 12). If the remote terminal is calling a single host, the ADM serving the modem must be set up in the autodial (Hot Line) mode with the DN programmed to the DN of the called host (skip step 12).			
	Note 6: Auto-answer: The terminal and the ASIM must be powered up with the terminal on-line. The ASIM Auto-answer switch must be set to ON. An incoming call is answered automatically if the ASIM is not in the process of establishing a call nor in the Modify Display feature mode. If the terminal is autobauded before the incoming asynchronous call is received (or has a default or previous speed set), mismatching the baud rate between the incoming call and the local terminal causes the call to be released.			
	If the calling party issues re-down-line-load, ASIM treats it as a new incoming call and gives the appropriate prompts, e.g., INCOMING CALL CONNECTED/UNDER TEST/INCOMPATIBLE INCOMING CALL RELEASED/etc.			
	Terminal not autobauded.	Incoming call.	NNNN INCOMING CALL CONNECTED OR NNNN UNDER TEST	NNNN is calling DDN. Call is set up even though baud rate does not match. With no match, illegible information is received.
	Terminal autobauded.	Call comes in with matching baud rate.	NNNN INCOMING CALL CONNECTED OR NNNN UNDER TEST	NNNN is calling DDN. Data call established.
		Call comes in mismatching baud rate.	NNNN INCOMPATIBLE INCOMING CALL RELEASED	NNNN is calling DDN. Data call not set up. Cannot transmit data.

Procedure 13
Keyboard dialing from the ASIM data station (Part 9 of 9)

Step	Action	Terminal Echo	Prompt	Comment
	Note 7: When Ring Again has been placed, no further action should be taken unless the user wants to cancel Ring Again.			
	Note 8: If Speed Call or Autodial features are denied to the DN, attempts to use them will result (after a pause) in the prompt SERVICE UNAVAILABLE, REENTER.			
	Note 9: For disconnection by a local host, the device (ADM or MCDS) connected to the host must be configured to monitor the Data Terminal Ready (DTR) signal from the host. For disconnection by a remote host, the modem connected to the host must be configured to monitor the DTR signal from the host.			
	Note 10: Manual Answer: The terminal and the ASIM must be powered up with the terminal on-line. The ASIM Manual Answer switch must be set to ON. An incoming call is answered manually from the terminal keyboard by hitting carriage return.			
	Terminal autobauded.	Call comes in.	DDN lamp winks INCOMING CALL ANSWER Y/N?	
		Enter Y.	NNNN INCOMING CALL CONNECTED	NNNN is calling DDN. Matching baud rate.
			or	
			NNNN INCOMPATIBLE CALL RELEASED	NNNN is calling DDN. Mismatching baud rate.
			or	
			NNNN UNDER TEST	NNNN is calling DDN.
	Note 11: When the ASIM is connected to a VT100 terminal, a break on the terminal drops the DTR and sends a long break. ASIM does not display the released message. The prompt can be displayed by forcing the DTR on the ASIM.			
	When the ASIM is connected to a VT102 terminal, a break on the terminal drops the DTR. The ASIM does not display the released message unless the call is released from the keypad.			

Keypad dialing from the ASIM data station

Keypad dialing is applicable to ASCII, asynchronous/synchronous start-stop character mode, and interactive terminals equipped with an EIA RS-232-C interface.

The ASIM and keypad dialing provide the following capabilities:

- Call origination to local and remote hosts
- Manual or Auto-answer
- Ring Again
- Autodial data calling to local hosts
- Speed Call
- Automatic set relocation
- Asynchronous data baud rate of 110, 150, 300, 600, 1200, 2400, 4800, 9600, and 19200 bps
- Synchronous data baud rate of 1200, 2400, 3600, 4800, 7200, 9600, 19200, 38400, 40800, 48000 and 56000 bps (ASIM only)
- Two stop-bits for 110 baud and one bit for all other baud rates

Miscellaneous information

- Ensure that the data terminal is on-line and both the terminal and the ASIM are turned on.
- Dial the call from the standard dial pad on the ASIM. The * and # are accepted and treated as touch pad items.
- For set relocation, the off-hook and on-hook are simulated as follows:
  - Off-hook: Press reserved key below Ring Again and then press * key.
  - On-hook: Press reserved key below Ring Again and then press # key.
- Use RELEASE key if it is necessary to abandon a call during call setup.

Procedure 14
Keypad dialing from ASIM data station (Part 1 of 6)

Step	Action	Prompt - Indicator	Comment
	Start condition.		Data Station idle. Terminal and ASIM power on.
1	Data Autodial Active?		If yes, go to step 18. If not, go to step 3 (Note 8).
2	Speed Call Active?		If yes, go to step 20. If not, go to step 3 (Note 8).
3	Operate DDN key.	DDN lamp on.	
Call to local host or AMP calling			
4	Enter number.		All numeric input, #, and * are accepted. ASIM sends digits to Meridian 1, which places call to host.
5	Called host answers (if busy, see step 13 or 16).	CALL CONNECTED SESSION STARTS CONNECT lamp on.	Data modules perform handshake, and data channel becomes transparent (Note 2).
6	Follow login procedures.		Data session begins.
7	Proceed with data session.		Host echoes all typed input. Go to step 23 for disconnect procedures.
Call to remote host			
8	Enter modem number XXXX.	DDN and MODEM CALL lamps wink.	Wait until modem is reserved.
9	Enter remote number digits.		
10	Press MODEM CALL key.	MODEM CALL lamp on. DDN lamp winks.	The Meridian 1 places a call to the remote number.

Procedure 14
Keypad dialing from ASIM data station (Part 2 of 6)

Step	Action	Prompt - Indicator	Comment
11	Remote host answers.	CALL CONNECTED SESSION STARTS DDN, CONNECT, and MODEM CALL lamps on.	The call is connected. (If busy, go to step 14 or 17.)
12	Follow login procedures.		Data session begins.
13	Proceed with data session.		Host echoes all typed input. Go to step 23 for disconnect procedures.
Host busy—Ring Again active?			
14	Called host busy.	RING AGAIN PLACED RELEASED RING AGAIN lamp on. DDN lamp off.	The ASIM uses the Meridian 1 Ring Again feature to retry the call (Note 7).
15	Called port becomes free.	DATA STATION NOW AVAILABLE ENTER (CR) RING AGAIN lamp winks.	ASIM sends BELL characters from terminal.
16	Operate DDN and RING AGAIN keys in sequence.	CALL CONNECTED SESSION STARTS DDN and CONNECT lamps on. RING AGAIN lamp off.	Go to step 6 or 11.
Host busy—no Ring Again			
17	Called host busy.	DDN lamp flashes.	Release DDN key.
Data Autodial Active?		**Local host only (Note 1)**	
18	Operate DDN key.	DDN lamp on.	
19	Operate AUTODIAL key.		Meridian 1 places the call to the predesignated number. Return to step 5.

Procedure 14
Keypad dialing from ASIM data station (Part 3 of 6)

Step	Action	Prompt - Indicator	Comment
Speed Call Active?			
All speed call numbers must be programmed in database against the user's DDN.			
20	Operate DDN key.	DDN lamp on.	
21	Operate SPEED CALL key.	SPEED CALL lamp on.	
22	Enter 1-, 2-, or 3-digit code for the number to be stored.	SPEED CALL lamp off.	Meridian 1 places the call to the predesignated number. Return to step 5.
Call disconnect procedures			
23	Enter a disconnect command such as LOGO or press Control + D to terminate the session and to initiate call disconnect by the host terminal. This action causes host to drop DTR and release the connection (Note 9). or Operate the ASIM RELEASE key. or Operate break key for 1.6 seconds (asynchronous operation only). (For terminals with overlapping timed breaks, it is necessary to operate the break key several times. This method does not work on terminals with non-overlapping timed breaks.) or At the terminal, turn LINE/LOCAL to LOCAL or POWER switch to POWER OFF. or Power down ASIM for about 1.6 seconds.		
24	Call disconnected.	CALL RELEASED. DDN lamp off.	The prompt only appears if ASIM is on (Note 10).

Procedure 14
Keypad dialing from ASIM data station (Part 4 of 6)

Step	Action	Prompt - Indicator	Comment
Program or modify Autodial			
25	Press AUTODIAL key. (Do not operate DDN key.)	AUTODIAL lamp flashes.	
26	Enter new number.		
27	Press AUTODIAL key.	AUTODIAL lamp off.	Autodial number is changed.
Program or modify Speed Call		**List controller only**	
28	Press SPEED CALL key. (Do not operate DDN key.)	SPEED CALL lamp flashes.	If lamp does not flash, this station is not a Speed Call Controller and cannot store numbers.
29	Dial 1- to 3-digit access code.		
30	Dial Speed Call number.		Include * and # where necessary.
31	Press SPEED CALL key.	SPEED CALL lamp off.	Speed Call list is now updated with entry.
32	Repeat steps 28–31 to program more numbers.		Use a different access code for each different number.
Automatic set relocation			
33	Press DDN key.	DDN lamp on.	

Procedure 14
Keypad dialing from ASIM data station (Part 5 of 6)

Step	Action	Prompt - Indicator	Comment
34	Dial the Special Prefix code plus the set relocation access code "81."		
35	Dial security code (if required).		
36	Dial 4-digit identification code.		After a few seconds, the DDN lamp goes dark.
37	Unplug ASIM. Plug in at a location equipped with a Terminal Number (TN) of the same type.		
38	Press RESERVED key (one below Ring Again key) and * keys.		This provides an off-hook indication.
39	Dial 4-digit identification code.		This must be the same 4-digit code entered in step 36. A 2-second tone is heard, after a slight pause, to indicate the set was successfully relocated.
40	Press RESERVED key (one below Ring Again key) and # keys.		This provides an on-hook indication.

Procedure 14
Keypad dialing from ASIM data station (Part 6 of 6)

Step	Action	Prompt - Indicator	Comment

Note 1: You can modify the Autodial and Speed Call numbers from the DTE keypad or with a service change to the Meridian 1 database (steps 25 through 32).

Note 2: No call progress tones are provided during call setup.

Note 3: If you want to abandon the call during the call setup stage, operate the RELEASE key.

Note 4: During call setup, there is a maximum number of characters. If this limit is exceeded, the ASIM only uses the number it requires.

Note 5: If a remote terminal is calling via the incoming modem pool to multiple hosts, the ADM serving the modems must be set up in the non-autodial (non-Hot Line) mode and the caller must enter the DN of the called host (step 12).

If the remote terminal is calling a single host, the ADM serving the modem must be set up in the autodial (Hot Line) mode with the DN programmed to the DN of the called host (skip step 12).

Note 6: Auto- or Manual Answer: The terminal and the ASIM must be powered up with the terminal on-line. An incoming call is answered automatically or manually by selecting either AUTO or MANUAL mode. When AUTO is selected, an incoming call is answered automatically after a single bell Character sounds.

Note 7: Once you have placed Ring Again, do not take any further action unless you want to cancel Ring Again.

Note 8: You cannot use Speed Call or Autodial if the DN does not accept them.

Note 9: For disconnection by a local host, the device (ADM or MCDS) connected to the host must be configured to monitor the Data Terminal Ready (DTR) signal from the host. For disconnection by a remote host, the modem connected to the host must be configured to monitor the DTR signal from the host.

Note 10: When the ASIM is connected to a VT100 terminal, a break on the terminal drops the DTR and sends a long break. The ASIM does not display a released message. The prompt can be displayed by forcing the DTR on the ASIM. When the ASIM is connected to a VT102 terminal, a break on the terminal drops the DTR. The ASIM does not display a released message unless the call is released from the keypad. When the ASIM is associated with a printer, configure the printer for mark and space parity.

Note 11: The call is dropped immediately if SADM calls ASIM, MCDS, or AIM and the baud rate plus parity do not match. The Synchronous Add-on Data Module (SADM) releases the call (after one to two minutes for low baud rates, for example, 300 bps).

Note 12: When a call is connected between two modules, power failure or removal of power from one data module does not release the connection until the power is restored to the data module.

Note 13: When a modem is reserved (during a call to a remote host) and the remote number is misdialed, operate the release key to release the remote modem (the DDN lamp flashes) and then operate the DDN and release keys to release the reserved modem and the call. This condition applies particularly to synchronous half-duplex operation mode.

Performance testing operations

Content list

The following are the topics in this section:

- Reference List 61
- In-house transmission performance testing 62
- Interoffice data transmission performance testing 62
- Outbound Modem Pool fault testing 63
- Inbound Modem Pool fault testing 63
- AIM and AILC fault testing 64
- ASIM troubleshooting procedures 69

Reference List

The following are the references in this section:

- *X11 Features and Services* (553-3001-306)

Many variable scans degrade the data-transmission performance of a colocated ADM, stand-alone ADM, or MCDS that might otherwise function satisfactorily from a call-processing or features standpoint.

There are three general reasons for excessive errors:

- Human error in operation or application
- Faults in the equipment hardware and software
- Faults in the connecting transmission facility

Fault isolation (Procedure 15), therefore, becomes a matter of identifying the involved elements by taking systematic corrective action.

The error-rate specification for Meridian data feature transmission is

- In-House: one error in 10 Mbits
- Outgoing: one error in 100 Kbits (modem dependent)

In-house transmission performance testing

In-house data calls are conducted from data stations to data stations and from data stations to stand-alone ADMs or Multi-Channel Data Systems connected to DTE. Loopback testing can be performed from any data station to an in-house facility to verify the integrity of the ADM under test (Procedure 15).

Loopback testing from a known operational data station can also isolate faults to called ADMs (or Multi-Channel Data Systems) and consolidate faults to transmission lines according to the desired test sequence or transmission type in which it is used.

Interoffice data transmission performance testing

The provision of modem pooling makes inbound and outbound data calling through the Meridian 1 switching network possible. The modem pool allows data calls to be switched over voice-grade analog trunks to remote or local data facilities. This capability, while allowing efficient use of modems and trunks, adds several variables to the process of locating errors.

In addition to the probable sources of transmission error to which in-house data calls are subjected, Modem Pool calls are subject to error introduced by local modem faults, remote modem faults, and transmission gradients inherent in many Digital Distance Dialing (DDD) applications.

Techniques to isolate errors for Modem Pool calls are dependent on the type of modems supplied in the modem pool. The local loopback facility is able to test in-house ADMs or Multi-Channel Data Systems connected to the modem pool.

Outbound Modem Pool fault testing

Successful Modem Pool services begin with very careful configuration of each ADM equipped with a modem. If the modems in a modem pool are of various manufacture, each MUST BE compatible to whatever is located at the dialed remote location. During modem pool installation, ADM configuration requirements include

- Setting jumper plugs on QPC314/399 pack
- Setting the modem's VFDN on S1 on the QPC314/399 pack
- Setting S3.7 option switch to AUTO-ANSWER

It is recommended that the modem pool be located in close proximity to the PE (that is, in the equipment room). This ensures that each ADM is less sensitive to wire-gauge gradients.

Inbound Modem Pool fault testing

The same care specified for outbound pooled modems applies for the inbound pool.

ADM configuration requirements include

- Setting jumper plugs on QPC314/399 pack
- Setting the modem's DDN on S1 on the QPC314/399 pack
- Setting all S3 option parameter switches to match modem parameters
- Setting S3.7 option switch to AUTO-ANSWER

It is recommended that the modem pool be located in close proximity to the PE (that is, in the equipment room). This ensures that each ADM is less sensitive to wire-gauge gradients.

AIM and AILC fault testing

Make sure there are no pair reversals between the AIM and the AILC. Failure to maintain correct polarity within a pair prevents correct operation; for example, if logical "one" and "zero" are reversed, the AILC is unable to autobaud.

Procedure 15
Loopback testing of in-house data colocated and stand-alone ADM

1. Connect a Bit Error Rate Tester (BERT) or data terminal to the ADM used to control the test.
2. Set test station ADM switch S3.7 to AUTO ANSWER. The ADM must be equipped with a data terminal.
3. At the data station to be tested, set ADM switch S3 as follows:
   - S3.1—INH (Not used with Synch ADM)
   - S3.2—EVEN
   - S3.3—FDX (Not used with Synch ADM)
   - S3.4—according to DTE
   - S3.5—according to DTE
   - S3.6—4W
   - S3.7—AUTO
   - S3.8—LOOPBACK
4. Depending on the type of station, perform the following:
   - For colocated ADM, go to step 5.
   - For stand-alone ADM, go to step 9.
5. Establish a DDN call from the station under test to the test station.
6. Transmit a test message from the station under test.
7. Read the results at the station under test. Observe the performance of the ADM.
8. Go to step 12.
9. Establish a DDN call from the test station to the station under test.
10. Transmit a test message from the test station to the station under test.

11 Read the results at the test station. Observe the performance of the ADM at the station under test.

12 The message should return intact. The SEND and RECEIVE lamps should light.

13 If errors are contained in the message, repeat a loopback test after each of the appropriate fault-location procedures below are followed.

— Conflicting S3 switch setting (for example, ENB and 8-CODE): Check S3 switch settings per step 3; check data terminal parameters. Reset S3 as required.

— Faulty EIA cable. Check and replace if required.

— Jumpers E12/E13/E14 on QPC315/499 are pinned for inappropriate wire-gauge setting or are pinned to a wire-gauge setting that conflicts with Data Line Card (DLC) settings.

- Re-pin jumpers to match wire-gauge setting of DLC.
- Observe any change in data received.

Note 1: If this action clears the errors, STOP. Retain the corrective jumper settings.

Note 2: If errors persist, conduct a wire-gauge test before proceeding to Step 13d.

— SL-1 set attached to ADM under test is faulty.

- The DLC must be switched to stand-alone.
- Remove ADM from SL-1 set and restore the yellow and black mounting cord leads on the SL-1 set to their standard positions.

— Test SL-1 set per *X11 Features and Services* (553-3001-306); replace if faulty. Reconnect SL-1 set if functioning normally.

— ADM (or MCDS) under test is out-of-range.

- Check maximum allowable cable-feet for wire gauge used. Correct if maximum is exceeded.

— Bridge taps are present.

- Remove any bridge taps.

— Improper connections made from ADM (or MCDS) to PE.

- Check all physical connections and terminations.
- Conduct continuity tests as required.

— DLC port assigned to the DLC under test is faulty.

- Load LD 32 (Network and PE Replacement Diagnostic) and test. Replace pack if test fails.
- If the ADM (or MCDS) assigned to the other data port on the pack is functioning normally, reassign the ADM (or MCDS) under test to that TN.

— ADM (or MCDS) under test is faulty.

- If loopback tests were unsatisfactory after conducting the procedures in Steps (a) through (i), follow procedures shown in Procedure 16 before replacing the ADM (or MCDS) under test.

Procedure 16
ADM troubleshooting procedures (Part 1 of 2)

Symptom	Procedure
Dark power indicator (LED).	Ensure that power transformer has an AC source. Ensure that transformer output is properly connected to ADM.
Dial tone is not returned when DDN key is operated. Data Shift key LED lights.	Ensure that all leads are properly terminated in host SL-1 set. Check switch S4-2. On QPC314 (QMT7), if terminal gives DTR, S4-2 should be up; otherwise, switch should be down. On QPC399 (QMT8), if terminal gives DTR, S4-2 should be off. Check that the terminal is set on-line.
ADM functions per Nortel Networks Publication; no response on action device (terminal).	Ensure that action device is connected to ADM using RS-232 cable. Loopback switch is off. Switch settings match between ADM and terminal.

Procedure 16
ADM troubleshooting procedures (Part 2 of 2)

Symptom	Procedure
Ring no answer (called DN flashes).	Check all cross-connect jumpers and station cabling for bridge taps or grounds. If ADM is accessing a computer port, determine if port returns DTR. On QPC314 (QMT7), set SW4 position 2 up. On QPC399 (QMT8), set S4-2 should be off. Make sure called ADM is in AUTO-ANSWER.
All LED on host SL-1 set flash.	QPC311 is not properly set, correct options per NTP. Reset ADM.
In modem pooling configuration, ADM call transfers to wrong VFDN.	Ensure that correct modem is being dialed. Ensure that VFDN SW (matrix SW) reflects modem's DN (500 lines).
In modem-pooling configuration, ADM connect and transfer but there is no input from called host.	Position loopback option SW3 position 8 to OFF. Ensure that correct baud rate. Ensure that ADM and terminal's switch settings match. Ensure that host sees correct character for items such as autobaud CR or space bar.
Terminal receives double characters with loopback option in the OFF position.	ADM SW3 position 6 must be in 4W select position. Check terminal switch settings; they should be in FDX.
When calling a colocated or stand-alone ADM, changes must be made to baud rate or any other switch position on S3.	Down-line load ADM by operating the DDN key on ADM from calling ADM.
Ringback tone stops; no connect lamp or tone.	Operate RESET switch at the called unit.
Ringback tone ends; continuous connect tone or a howl is received.	Operate RESET switch at calling unit. Call another DDN after RESET; if symptom persists, remove and replace DLC.
Garbled characters received on terminal.	Option E-12-13-14 on ADM must match option E-37-38-39 or E-52-53-54 of the DLC. See option settings ADM and DLC.

Procedure 17
AIM troubleshooting procedures

Symptom	Procedure
No response from AILC:	
AIM power indicator (LED) is dark.	Check AIM power switch. Ensure that power transformer has an AC source. Ensure that AIM transformer is plugged in. Ensure that transformer leads are properly connected to the AIM.
AIM power indicator (LED) is lit.	Ensure that terminal is powered up. Ensure that terminal is properly connected to AIM. Ensure that terminal is ON LINE. Ensure that terminal is ready for data transmission with the proper speed and other parameters correctly set up.
No response from AILC:	
AIM power lamp is steadily lit.	Ensure that AIM is properly connected to AILC. Verify that the wire pairs are not reversed. Verify that there are no open leads.
Still no response from AILC.	Use another AILC. Use another terminal. Use another AIM.
Responses are received from AILC:	
Characters are garbled.	Check bit rate of terminal. Check number of stop bits on terminal. Verify that the wire pairs are not reversed. Try a new terminal. Try a new AILC.
Some characters are missing or garbled.	Check parity setting on the terminal.
A call cannot be placed to a remote unit.	Ensure that the database is properly programmed. Ensure that the remote unit is capable of communicating with the originating terminal. Try originating a call to another terminal. Try a new AILC.

ASIM troubleshooting procedures

If the ASIM does not operate properly, perform the following checks:

1 Ensure that the data station is ready for data transmission with the proper speed and other parameters set on the terminal.

2 Ensure that the ASIM power supply is plugged in. Operate the force DTR key on the ASIM and verify the DDN lamp lights. Replace the power supply if the lamp does not light.

Note: The power supply is a field replaceable item and should not be returned to Nortel Networks for repair.

- Is data terminal power on and ON-LINE/OFF-LINE (LINE/LOCAL) switch (if equipped) set to ON-LINE (LINE)?

If the call is connected but the station is not sending or receiving data, check the following:

1 Is Monitor Send lamp on DTE (if equipped) or the SD lamp on the ASIM flashing while sending data?

If they do not flash, perform the following:

2 Ensure that the RS-232 cable is properly connected to the ASIM and DTE.

3 Ensure that the ON-LINE/OFF-LINE (LINE/LOCAL) switch is set to ON-LINE (LINE).

If the call is connected but illegible characters appear on the screen, perform the following:

1 When calling another Meridian data device, ensure that the operating controls of both data devices connected to the Meridian device match.

2 Ensure that the terminal is set so it does not check parity or it is set to 8 bits (no parity). If it is set for 7 bits, even or odd parity, enter a period (.) and (CR) to force the ASIM to calculate parity and to provide legible prompts.

Procedure 18
MCDS troubleshooting procedures (Part 1 of 2)

Symptom	Procedure
Cannot establish the call (CONN LED dark).	Is DTR LED lit to indicate DTR is received from the attached device? — NO: (see DTR LED dark). — YES: Is wiring between MCDS and Line Card correct? — NO: (correct any defective wiring). — YES: Is DN properly configured? — NO: (correct DN configuration). — YES: Is Line Card enabled? — NO: (enable Line Card). — YES: (try a new Line Card). Are speed and transmission parameters supported by MCDS.(If the speed and transmission parameters used are not supported by MCDS, call cannot be established.) — NO: (correct defective condition). — YES: Attempt call using another port (use patch panel if available) on this or another card.
Call established, but device connected to MCDS-AC not receiving data or getting junk data.	Is RD LED lit to indicate card is transmitting data to attached device? — NO: (reestablish call using another port—(use patch panel)—on this or another card). — YES: Inspect wiring from MCDS to DTE. Check the speed and transmission parameters.

Procedure 18
MCDS troubleshooting procedures (Part 2 of 2)

Symptom	Procedure
Call established, but remote device not receiving data or is receiving junk data.	Is SD LED lit to indicate card is receiving data from the attached device? — NO: (inspect wiring from MCDS to DTE). — YES: Do speed and transmission parameters match? — NO: (correct defective condition). — YES: Reestablish call using another port (use patch panel) on this or another card.
DTR LED dark (No DTR).	Is connecting device turned on? — NO: (correct any defective condition). — YES: Inspect wiring from MCDS to terminal or computer port. (Is it connected to the selected port?) Is the connecting device providing DTR? — NO: (change to the FORCED DTR configuration on the MCDS-AC). — YES: Use another port (use patch panel) on this or another card.
More than one card on a shelf not operating properly.	Ensure that power supply is operating correctly. Inspect back panel for shorts or crosses. Inspect wiring from MCDS to DTE.
Power supply checks.	Power supply is connected to available 110 V AC supply. Power LED lights when switch is on. Fuse is not blown. Fuse is the correct value (3 amp). Use voltage test points to verify +.2, +9, –9, +5 V and GRD.

If problems occur during call setup, disconnect and attempt to place the call again. Place the call from a regular phone to ensure that the receiving station is working before calling for service.

If pseudo random pattern 511 data is sent (Tektronix 834) in the idle mode, the keypad is made inoperative. Use the Break or Release keys to clear the condition.

Glossary

ADM call controls

There are three call control key and lamp pairs located on the bottom right-hand portion of the ADM. Four additional lamps—CONNECT, RECEIVE, SEND, and POWER are also provided as status indicators (see Figure 1).

ADM transmission controls

These controls are located on the top center of the ADM (Figure 1) and consist of the following:

- A rotary dial (S2) for selection of data transmission speeds
- Selection of transmission parameters

Asynchronous Interface Line Card

The AILC is the printed circuit pack QPC430, which is installed in the peripheral equipment (PE) to support an AIM only. The AILC interfaces a DTE via an AIM to the Meridian 1 system for data switching.

There are no controls or switches on the card. There is a LED to indicate when the card is disabled.

AIM call controls

The AIM is equipped with a power on/off switch and a power on indicator lamp (Figure 2).

ASIM call controls

The ASIM is equipped with a dial pad, key and lamp pad, synchronous data speed selection switch, and data control switches. The speed selection and data mode switches are recessed under a flip-up lid. User instructions are provided on the underside of this lid (Figure 3).

Figure 1
ADM and user option selection controls

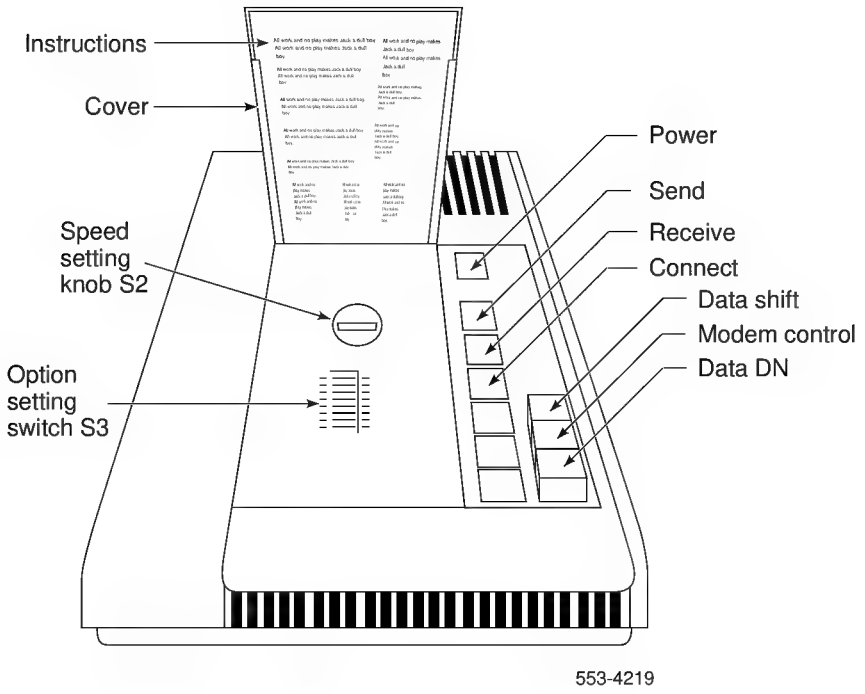
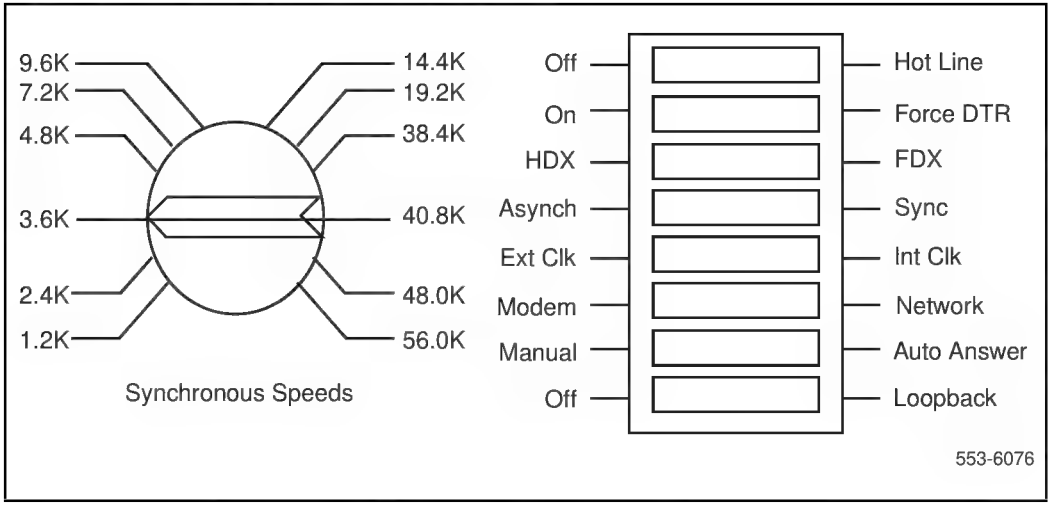


Figure 2
ASIM recessed user option selection controls



ASIM Automatic Set Relocation

This feature allows ASIM users to move sets to another location without the intervention of a craftsperson.

Directory numbers and features assigned to the set are maintained. Up to 32 sets relocate at any one time.

The following codes are associated with the feature:

- Special Prefix code
- Set Relocation access code 81
- Security code (optional)
- Identification code

The customer can assign a four-digit security code. When the option is selected, the security code must be entered before a set can be moved. The identification code is user-selectable and can be any four-digit number (excluding & and #).

Colocated ADM

This refers to an ADM connected to an SL-1 terminal. (See also "Data station" and "Stand-alone ADM.")

Computer pool

This is a group of computer ports, each port connected to a stand-alone ADM or to a port on a MCDS interface card.

Each port is assigned a DDN (see "Directory Numbers"), and all computer-port DDNs assigned to the same hunt group constitute a computer pool. A computer pool allows data callers to access available ports on a contention basis. The QPC311 DLC is a printed circuit pack, which is installed in the PE to support Meridian data services.

One DLC consists of four ports that operate independently (two voice and two data) or as two voice and data pairs. Two ports support SL-1 terminals (voice) and two ports support ADM and ASIM (data).

Option switches on the pack select colocated ADM or stand-alone ADM operation.

The QPC432 4-port DLC is a printed circuit pack, which is installed in the PE to support Meridian data services.

Each 4PDLC consists of four data only ports that operate independently.

All ADMs and ASIMs must terminate on a DLC or 4PDLC data port.

Data mode

This term is used to indicate the operating status of Meridian data station. When the DATA SHIFT lamp on the ADM is lit, all key depressions on the colocated SL-1 terminal will correspond to the DDN.

Data station

This is a colocated SL-1 set and ADM connected to Data Terminal Equipment (DTE). A data station allows, in addition to regular telephone calls, incoming and outgoing data calling and the application of Meridian 1 calling features to data calls.

Directory Numbers

A Directory Number (DN) refers to a telephone extension number within the Meridian 1 system. In this document, reference is made to the following four DN types:

- DDN: Data Directory Number, assigned to the ADM.
- PDN: Prime Directory Number, assigned to the SL-1 set as its main extension.
- VDN: Voice Directory Number, assigned to an SL-1 terminal as a secondary extension.
- VFDN: Voice Frequency Directory Number, physically set via Switch S1 on an ADM connected to a voice-grade modem. The system, during a Outgoing Modem Pool call, automatically accesses the modem's VFDN, via a Modem Pool Line Card (MPLC) port.

During an Inbound Modem Pool Call, the system accesses the modem's DDN via a 500-set line card port.

Modem pool

This refers to one or more voice-grade modems supplied for Meridian data calling over outbound and inbound voice-grade trunks.

With Manual Modem Pooling, each asynchronous outbound pooled modem is connected to a stand-alone ADM on the digital side and a QPC353 MPLC on the analog side.

Each synchronous outbound pooled modem is connected to a stand-alone ADM on the digital side and a QPC60 line card on the analog side.

Each modem in an inbound modem pool is connected to a QPC60 line card on the analog side and to an ADM on the digital side.

Each ADM connected to a modem is assigned a DDN, and all DDNs assigned to a hunt group constitute a modem pool. A modem pool allows data callers to reserve and use available modems on a contention basis. The modem pool is typically located in the equipment room.

> ***Note:*** In inbound modem pooling, the ADM triggers its Hot Line dialing off the EIA RI signal the modem gives when it sees ring voltage on the incoming line. However, some synchronous modems that are in the 4-wire full duplex (FDX) leased line mode keep RI high. The ADM is unable to distinguish between the two, so with this in mind, assign Hot Line.

With Automated Modem Pooling (AMP), each pooled modem is connected to a stand-alone ADM on the digital side and to a QPC60 line card on the analog side.

With the AMP feature, the outbound and inbound calls can use the same modem pool.

Each pooled modem is configured to look like trunk members in a trunk block.

The AMP creates service changes to pair the ADM and modems together. The AMP uses the Data Hunting feature to organize the ADM hunting.

Stand-alone ADM

This refers to any ADM that is not equipped with a companion SL-1 terminal. A stand-alone ADM provides incoming data calling services when SL-1 terminal telephone features are not required. A stand-alone ADM can interface with either of the following:

- DTE: computer ports, printers, word processors, teletypewriters, and other peripherals
- DCE: modems

The MCDS provides ADM-like capabilities for interfacing computer ports to the Meridian 1 system. It is designed to operate in a computer room environment with computer ports, printers, teletypewriters, and other answer-only peripherals.

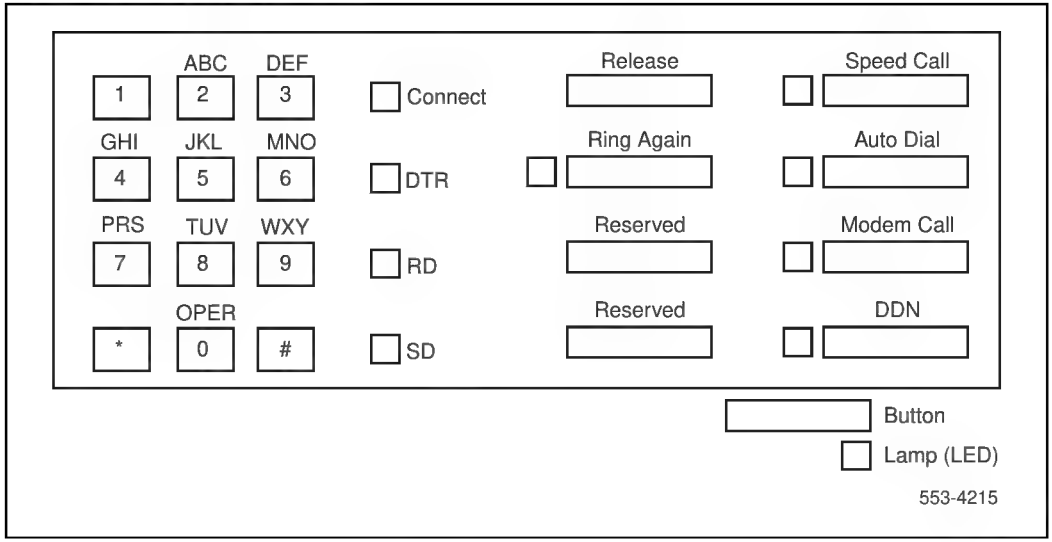
Test station

This refers to a Meridian data station allocated for maintenance testing. One test station is typically located in the equipment room.

Voice mode

This term is used to indicate the operating status of a Meridian data station. When the DATA SHIFT lamp on the ADM is dark, all key depressions on the SL-1 terminal will correspond to the PDN or VDN.

Figure 3
ASIM dial and keypad layout



Index

A

ADM (Add-on Data Module), 7
call controls, 73
colocated, 76
computer ports for, 76
for Hot Line calls, 26
in modem pooling, 63, 78
in testing procedures, 10, 11
intraoffice data station calls with, 13
keyboard dialing from, 29
loopback testing with, 64
stand-alone, 79
transmission controls, 73
troubleshooting, 66
AILC (Asynchronous Interface Line Card), 7
description, 73
fault testing, 64
in testing procedures, 10
AIM (Asynchronous Interface Module)
call controls, 73
fault testing, 64
function, 7
in testing procedures, 10, 11
keyboard dialing with, 33
troubleshooting, 68
AMP (Automated Modem Pooling)
connections, 78
in keyboard dialing from AIM data stations, 35
in keyboard dialing from ASIM data stations, 46
in keyboard dialing from colocated ADM, 29
in keypad dialing, 55
ASIM (Asynchronous/Synchronous Interface Module)
automatic set relocation, 76
call controls, 73
computer ports for, 76
dial and keypad layout, 80
function, 7
in testing procedures, 10, 11
keyboard dialing with, 42
keypad dialing with, 54
troubleshooting, 69
asynchronous Hot Line call mode, 26
auto-answer
in keyboard dialing from AIM data stations, 33
in keyboard dialing from ASIM data stations, 42
in keypad dialing, 54
autobauding, 42, 64
autodialing
in keyboard dialing from AIM data stations, 33, 37, 39
in keyboard dialing from ASIM data stations, 42, 48, 50
in keypad dialing, 54, 56
operation, 21
automatic set relocation
ASIM, 76
in keypad dialing, 54, 58
autoparity, 42

B

baud rates
- in keyboard dialing from AIM data stations, 33
- in keyboard dialing from ASIM data stations, 42
- in keypad dialing, 54
- in testing procedures, 11

C

cable distance in testing procedures, 11
call controls
- ADM, 73
- AIM, 73
- ASIM, 73

Call Forward, 22
call origination
- in keyboard dialing, 28, 42
- in keypad dialing, 54

change of speed during active calls, 27
colocated ADM
- defined, 76
- intraoffice data station calls with, 13
- keyboard dialing from, 29
- loopback testing with, 64
- parts of, 7

computer pool, 76
CONNECT lamp, 73
connections in testing procedures, 10
controls
- ADM, 73
- AIM, 73
- ASIM, 73

D

data bits, 33
data calls
- voice calls during setup, 19
- with voice, 17

data mode, 77
data stations
- defined, 77
- keyboard dialing from, 33, 42
- keypad dialing from, 54
- outgoing calls, 14
- with colocated ADM, 13

DCE (Data Communication Equipment)
- in testing procedures, 10
- with stand-alone ADM, 79

DDD (Digital Distance Dialing), 62
DDN (Data Directory Number)
- defined, 77
- for computer pools, 76
- in inbound Modem Pooling, 63

dialing. *See* autodialing; KBD (keyboard) dialing; keypad dialing
disconnects in keyboard dialing
- from AIM data stations, 40
- from ASIM data stations, 51
- from colocated ADM, 32

disconnects in keypad dialing, 57
Display in keyboard dialing
- from AIM data stations, 38
- from ASIM data stations, 49

DLC (Data Line Card)
- for computer pools, 76
- in testing procedures, 11

DN (Directory Number), 77
DTE (Data Terminal Equipment)
- in testing procedures, 11
- interface for, 7
- with stand-alone ADM, 79

DTR (Digitone Receiver), 26

E

error sources, 61

F

fault isolation, 62

H

host busy
in keyboard dialing from AIM data stations, 37
in keyboard dialing from ASIM data stations, 47
in keypad dialing, 56
Hot Line calls, 26
in modem pooling, 78
keyboard dialing for, 28

I

inbound Modem Pool, testing, 63
indicators, ADM, 73
in-house transmission performance testing, 62
interoffice transmission performance testing, 62
intraoffice data station calls, 13

K

KBD (keyboard) dialing, 28
from AIM data stations, 7, 33
from ASIM data stations, 42
from colocated ADM, 29
key assignments in testing procedures, 10
keypad dialing, 54
keypad layout, ASIM, 80

L

lamps, ADM, 73
LD 10 program, 10
LD 11 program, 10
local hosts
in keyboard dialing from AIM data stations, 35
in keyboard dialing from ASIM data stations, 46
in keyboard dialing from colocated ADM, 29
in keypad dialing, 55
local modem faults, 62
loopback testing, 62, 64

M

Main menu in keyboard dialing
from AIM data stations, 33
from ASIM data stations, 43
maintenance testing, 79
Manual Modem Pooling, 78
MCDS (Multi-Channel Data System)
function, 8
in testing procedures, 10, 11
troubleshooting, 70
MCDS-AC (Multi-Channel Data System Asynchronous Card), 8
MDF (Main Distribution Frame), 10
menus in keyboard dialing
from AIM data stations, 33
from ASIM data stations, 43
mixed wire-gauge in testing procedures, 11
mode setting changes during active calls, 27
Modem Pooling
defined, 78
in interoffice transmission performance testing, 62
inbound, 63
outbound, 14, 63
with Hot Line calls, 26
Modify menu in keyboard dialing
from AIM data stations, 33
from ASIM data stations, 43
MPLC (Modem Pool Line Card)
in modem pooling, 78
in testing procedures, 10
in VFDN, 77

O

operating procedures, 12
originating calls
in keyboard dialing, 28, 33, 42
in keypad dialing, 54
intraoffice data station, 13
outgoing data station, 14
outbound Modem Pool, testing, 63
outgoing data station calls, originating, 14

P

pair reversals, 64

parity bits in keyboard dialing
from AIM data stations, 33
from ASIM data stations, 42
PDN (Prime Directory Number), 77
PE (peripheral equipment), 10, 11
PFT (Power Fail Transfer), 10
polarity, 64
pools, computer, 76
ports, computer pool, 76
POWER lamp, 73
power requirements, 9
prerequisites, 9

Q

QMT8 ADM, 26, 28
QPC311 DLC, 76
QPC353 MPLC, 78
QPC430 AILC, 73
QPC432 4PDLC, 77
QPC60 line cards, 78

R

RECEIVE lamp, 73
remote hosts
in keyboard dialing from AIM data stations, 36
in keyboard dialing from ASIM data stations, 47
in keyboard dialing from colocated ADM, 30
in keypad dialing, 55
remote loopback in keyboard dialing
from AIM data stations, 39
from ASIM data stations, 50
remote modem faults, 62
Ring Again
in keyboard dialing, 28
in keyboard dialing from AIM data stations, 33, 36
in keyboard dialing from ASIM data stations, 42, 47
in keyboard dialing from colocated ADM, 31
in keypad dialing, 54, 56
procedure, 23

S

SEND lamp, 73
set relocation
ASIM, 76
in keypad dialing, 54, 58
simultaneous voice and data calls, 17
SL-1 telephones, 7
computer ports for, 76
directory numbers for, 77
Speed Call
in keyboard dialing from AIM data stations, 37, 39
in keyboard dialing from ASIM data stations, 42, 48, 50
in keypad dialing, 54, 57, 58
procedure, 24
speed changes during active calls, 27
stand-alone ADM
defined, 79
loopback testing with, 64
status indicators, ADM, 73
stop-bits
in keyboard dialing, 33
in keypad dialing, 54
synchronous Hot Line call mode, 26

T

test stations, 9, 79
testing procedures, 10
TN (Terminal Number), 11
transmission controls
ADM, 73
in testing procedures, 11
transmission performance testing
in-house, 62
interoffice, 62
troubleshooting
ADM, 66
AIM, 68
ASIM, 69
MCDS, 70

V

VDN (Voice Directory Number), 77
VFDN (Voice Frequency Directory Number), 77
voice calls
during data call setup, 19
with data, 17
voice mode, 79

W

wire-gauge in testing procedures, 11

Meridian 1

Meridian data features

Operations and tests

Copyright © 1990–2000 Nortel Networks
All Rights Reserved
Information is subject to change without notice. Nortel Networks reserves the right to make changes in design or components as progress in engineering and manufacturing may warrant. This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC rules, and the radio interference regulations of Industry Canada. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their own expense.
SL-1 and Meridian 1 are trademarks of Nortel Networks.
Publication number: 553-2731-300
Document release: Standard 4.00
Date: April 2000
Printed in Canada

NORTEL NETWORKS

How the world shares ideas.